temperature of the ring-shaped member, with dependent claims 17 and 23 being amended to recite further features of the means for control of temperature of the ring-shaped member as being disposed below the ring-shaped member and effecting control of the temperature in the manner indicated. Additionally, claims 58 and 64 have been amended to recite such features.

Applicants note that as illustrated in Fig. 1, the ring-shaped member is indicated by reference numeral 12 and a temperature controller for controlling a temperature of the ring-shaped member 12 is indicated by reference numeral 15 and is disposed below a surface of the ring-shaped member. As described at page 13, lines 13 et. seq. of the specification, a ring-shaped member 12 shown in Fig. 1 is arranged in the periphery of sample 6 and member 12 has a surface made of silicon 13 which is bought into contact with the plasma with a temperature controller 15 being disposed just below member 12 to keep temperature of the member 12 at a fixed value. As described at page 14, lines 6-9 of the specification, the reaction on the surface of member 12 is adjustable by the bias regulated by the bias controller and the variation in time of the reaction is minimized by cooling function 15. Thus, the recited features of the independent claims 1 and 58 and the dependent claims are supported by the specification and drawings of this application.

The rejection of claims 1-8, 10-12, 14-29, 31-34, 36, 50-53 and 55-56 under 35 U.S.C. 103(a) as being unpatentable over Yokogawa et al, JP 9-321031 in view of Collins et al, U.S. Patent 6,068,784 and further in view of Kaji et al, EP 0793254 A2, and the rejection of claim 9 over the aforementioned cited art further in view of Gupta et al, U.S. Patent 5,902,494, are traversed insofar as they are applicable to the present claims, and reconsideration and withdrawal of the rejection are respectfully requested.

At the outset, as to the requirements to support a rejection under 35 U.S.C. 103, reference is made to the decision of In re Fine, 5 USPQ 2d 1596 (Fed. Cir. 1988), wherein the court pointed out that the PTO has the burden under §103 to establish a

prima facie case of obviousness and can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. As noted by the court, whether a particular combination might be "obvious to try" is not a legitimate test of patentability and obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. As further noted by the court, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.

Furthermore, such requirements have been clarified in the recent decision of In re Lee, 61 USPQ 2d 1430 (Fed. Cir. 2002) wherein the court in reversing an obviousness rejection indicated that deficiencies of the cited references cannot be remedied with conclusions about what is "basic knowledge" or "common knowledge". The court pointed out:

> The Examiner's conclusory statements that "the demonstration mode is just a programmable feature which can be used in many different device[s] for providing automatic introduction by adding the proper programming software" and that "another motivation would be that the automatic demonstration mode is user friendly and it functions as a tutorial" do not adequately address the issue of motivation to combine. This factual question of motivation is immaterial to patentability, and could not be resolved on subjected belief and unknown authority. It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to "[use] that which the inventor taught against its teacher."... Thus, the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion. (emphasis added)

In setting forth the rejection, the Examiner recognizes that Yokogawa et al and Collins et al do not expressly disclose the claimed ring-shaped member that has electrical power supplied thereto, but contends that Kaji et al disclose a ring-shaped

member 37A to which high frequency power is supplied through a high frequency power source 17A (referring to Fig. 14 and page 15, line 9 to page 16, line 11, of Kaji et al). The Examiner contends that in view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Yokogawa et al modified by Collins et al so as to include the ring-shaped member of Kaji et al because this allows for an increased plasma density (see page 15, lines 16-27) which provides better process results within the apparatus.

Irrespective of this position by the Examiner, which applicants submit represents a hindsight reconstruction attempt of the present invention by picking and choosing pieces from the prior art and utilizing the principle of "obvious to try" which is not the standard of 35 U.S.C. 103, see In re Fine, supra, there can be no question that neither Kaji et al nor the other cited art provide a disclosure or teaching of controlling the temperature of the ring-shaped member or that the temperature controller is provided below a surface of the ring-shaped member, as now recited in independent claims 1 and 58 and the dependent claims thereof. Assuming arguendo that the Examiner would take the position that control of temperature of any element is well known in the art and it would be obvious to control the temperature of the ring-shaped member in Kaji et al in combination with the other cited art, applicants submit that such position is representative of the principle of "obvious to try" and is not proper in the sense of 35 U.S.C. 103. See also In re Lee, supra. Thus, applicants submit that independent claims 1 and 58 and the dependent claims patentably distinguish over this proposed combination of references in the sense of 35 U.S.C. 103 and should be considered allowable thereover and should be considered allowable at this time.

Applicants note that Gupta et al also does not disclose a ring-shaped member as recited in independent claims 1 and 58 and means for controlling the temperature thereof. Thus, even assuming arguendo that Gupta et al could be properly

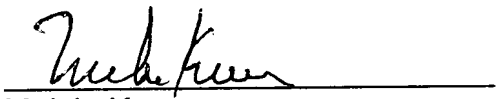
combined with the other cited art, the claimed features of the independent claims 1 and 58 and therewith the dependent claims are not disclosed or taught by such proposed combination of references.

Applicants further submit that as to the other recited features of the independent and dependent claims, the Examiner has again engaged in a hindsight reconstruction attempt and irrespective of the position set forth by the Examiner, the cited art cannot be properly combined in the sense of 35 U.S.C. 103 to provide the claimed features of the independent and dependent claims of this application. Accordingly, applicants submit that all claims present in this application patentably distinguish over the cited art in the sense of 35 U.S.C. 103 and should be considered allowable thereover.

In view of the above amendments and remarks, applicants submit that all claims under consideration in this application, i.e. claims 1-12, 14-34 and 36-66, should now be in condition for allowance, and issuance of an action of a favorable nature is courteously solicited.

To the extent necessary, applicant's petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (500.37328CX1) and please credit any excess fees to such deposit account.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Page 13, please amend the paragraph beginning at line 13 as follows:

In this embodiment of the present invention, a ring-shaped member 12 shown in Fig. 1 is arranged in the periphery of sample 6. Member 12 has a surface made of silicon ~~12~~ 13 which is brought into contact with the plasma. The configuration further includes a capacitor 14 to divide the bias applied to sample 6 to apply resultant bias to silicon film 13. Disposed just below member 12 is a temperature controller 15 to keep temperature of member 12 at a fixed value. A silicon wafer as sample 6 is ordinarily covered with a resist mask. The amount of radicals of the plasma incident to the surface of sample 6 is influenced by reaction with the resist mask. Fluorine radicals derived from the plasma of fluorocarbon gas such as C4F8 are consumed through reaction with the resist. The amount of fluorine radicals effectively incident to sample 6 is determined by the reaction. Therefore, as in the description of Fig. 2, the amount of fluorine radicals similarly varies between the central section and the peripheral section of sample 6. Member 12 consumes fluorine radicals remaining in the proximity of sample 6 to uniform the amount of radicals incident to sample 6. The reaction on the surface of member 12 is adjustable by the bias regulated by the bias controller described above. The variation in time of the reaction is minimized by cooling function 15. When the width of member 12 in a horizontal direction associated with the sample surface is set to the distance between plate 5 and sample 6, it is possible to completely uniform the radicals incident to sample 6. However, the width is substantially required only to be 20 mm or more to advantageously uniform the radicals. Resultantly, the width is set to an effective zone ranging from the distance between plate 5 and sample 6. to 20 mm. Height of member 12 in a direction orthogonal to sample 6 is also related to the width. The height can be set to a larger value as the width increases. Substantially, for a given

height, an optimal width is set to a value in a range ~~from~~ greater than 0 mm to 40 mm. In the embodiment of Fig. 1, the surface material of member 12 is silicon 13. However, carbon, silicon carbide, quartz, aluminum oxide, or aluminum may be used to obtain an equivalent advantage depending on types of radicals to be controlled.

IN THE CLAIMS:

Please 1, 17, 23, 58, 64 and 66 as follows:

1. (twice amended) A plasma etching system for use with a surface etching apparatus in which in a vacuum chamber including vacuum generating means, source material gas supply means, sample setting means, and high-frequency power applying means, the source material gas is transformed into plasma to achieve surface etching of the sample, means for generating the plasma including electromagnetic wave supply means and magnetic field generating means, comprising:

control means for introducing the electromagnetic field from a planar plate disposed in parallel with the sample into the vacuum chamber, for setting distance between the plate and the sample to a value in a range from 30 mm to one half of the smaller one of diameters respectively of the sample or the plate, and for controlling a quantity of reaction between a surface of the planar plate and radicals in the plasma;

means for making radicals incident to a surface of the sample uniform in quantity and type thereof including a ring-shaped member disposed in a periphery of the sample; and

means for reducing variation in time of radicals incident to the sample including means for control of temperature of the ring-shaped member.

17. (thrice amended) A plasma etching system in accordance with claim 1, wherein ~~means for reducing variation in time of radicals incident to the sample is a wall of the vacuum chamber and the planar plate and~~ the means for control of

temperature of the ring-shaped member is a temperature controller disposed below a surface of the ring-shaped member.

23. (thrice amended) A plasma etching system in accordance with claim ~~17~~ 1, wherein:

the means for controlling temperature of ~~the vacuum chamber, the planar plate, and~~ the ring-shaped member is disposed below a surface of the ring-shaped member and controls the temperature by circulating a liquid of which temperature is controlled; and

the temperature controlled ranges from 20°C to 140°C.

58. (amended) A plasma etching system for use with a surface etching apparatus in which in a vacuum chamber including vacuum generating means, source material gas supply means, sample setting means, and high-frequency power applying means, the source material gas is transformed into plasma to achieve surface etching of the sample, means for generating the plasma including electromagnetic wave supply means and magnetic field generating means, comprising:

a controller for introducing the electromagnetic field from a planar plate disposed in parallel with the sample into the vacuum chamber, for setting a distance between the plate and the sample to a value in a range from 30 mm to one half of a smaller one of respective diameters of the sample and the plate, and for controlling a quantity of reaction between a surface of the planar plate and radicals in the plasma;

wherein the distance between the sample and the plate is maintained during plasma etching; and

wherein a ring-shaped member is disposed in a periphery of the sample, and a temperature controller controls a temperature of the ring-shaped member.

64. (amended) A plasma etching system in accordance with claim 58, wherein the ~~means for making radicals incident to a surface of the sample uniform in quantity and type thereof is a~~ temperature controller is disposed below the surface of the ring-shaped member disposed in a periphery of the sample and effects cooling of the ring-shaped member.

66. (amended) A plasma etching system in accordance with claim ~~66~~ 64, wherein the ring-shaped member is applied with high-frequency power.